Äpre Instruments™

The S6|HR with SCI

THE interferometer for Micro Optics quality/process control

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Twyman-Green Interferometer with Spectrally Controlled Interferometer Source:
Measures surface form, transmitted wavefront, total thickness variation,
and prism face optical parallelism.

System Overview

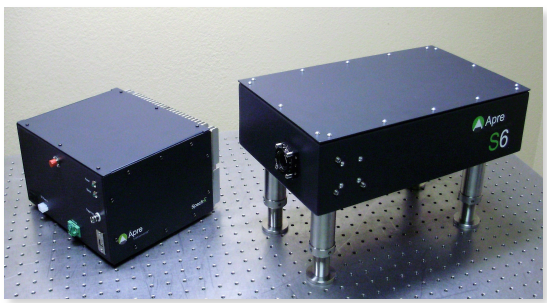
Output Diameter	6 mm (0.25 inch)
Optical Centerline	108 mm (4.25 inch)
Focus Range	Fixed
Interferometer Size (L x W x H)	41.5 x 54.5 x 10.0 cm (16.3 x 21.5 x 3.9 inch)
SCI Source Size (L x W x H)	21.7 x 27.0 x 14.1 cm (8.5 x 10.6 x 5.6 inch)
Weight (S6 & SCI)	5.7 kg (12.5 lb) & 7.3 kg (16 lb)
Measurement Techniques	Electronic Vibration Tolerant Phase-shifting
Alignment System	Twin Spot Alignment: ±2°
Light Source	APRE Spectrally Controlled Source @ 660 nm wavelength
Coherence Length	Switchable: >1 meter (align mode) to 100 μm
Output Polarization	Linear/Rotatable
Camera Resolution	2044 X 2044
Shutter Speed – shortest	9 μs
Digitization	8 bits
Computer & Software	High-Performance PC, any Windows® 64-bit OS, REVEAL software
Mounting Configurations	Horizontal or Vertical
Accessories	Pellicle to measure high reflectance parts

Performance

Image Resolution	15 μm
Image Distortion	<0.1% over entire focusing range
Image Field Flatness	<30 μm (worst case)
Fringe Resolution	~200 fringes/aperture
Retrace Error @ 200 Fringes	< λ/10
RMS Simple Repeatability[1]	<0.6 nm RMS 1σ – with NO averaging
RMS Wavefront Repeatability[2]	<0.6 nm RMS 1σ – with NO averaging
Measurable Part Reflectivity	0.5% to 40% (direct) and 41% to 100% (with attenuation filter or coatings)

Environment

Temperature	15 °C to 30 °C (59 °F to 86 °F)
ΔT/Δt	<1.0 °C/15 min
Humidity	5 to 95% relative, non-condensing
Vibration Isolation	Isolation System recommended for PSI



Enabling Consumer and Medical Optics Process Control

Micro-optics are an important enabler of the consumer and medical optics revolution. RGB combiner prisms, beam splitters, cell phone camera windows, and OCT and endoscope optics all depend on micro-prismatic and plane parallel optics.

Up until now measuring these tiny optics with accurate interferometry was impossible. High coherence laser interferometers are overwhelmed with confused fringes. And low coherence "white light" and "delay-line" interferometers are hard to align.

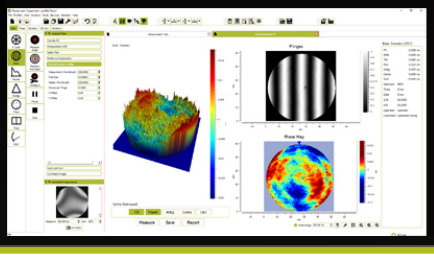
Now with APRE patented Spectrally Controlled Interferometry with easy alignment in the high coherence mode and eliminated back reflection interference in the low coherence mode, these difficult and important measurements as possible and practical.

When coupled with ÄPRE REVEAL data acquisition and analysis software it is finally possible to control and improve the manufacturing process and be assured good parts are being shipped.

[1] RMS Simple Repeatability is defined as 2X the standard deviation of the RMS for 36 sequential measurements (0 averages) of a short plano cavity

[2] RMS Wavefront Repeatability is defined as the mean RMS difference between a synthetic reference (defined as the average of all 36 sequential measurements) and each measurement plus 2X the standard deviation

[3] Retrace Error is defined as the PV residual error between a nulled measurement (the reference), subtracted from a measurement with 500 fringes of tilt, and expressed by the first 36 Zernike polynomials



REVEAL™

Interferometer Acquisition/Analysis Software

- Measure to custom report in <10 seconds
- Intuitive Control of SCI Source for rapid results
- Any Window® 64-bit Operating System

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Interferometer software's job is to show you meet spec. Is traceable regarding how you produced the result. And then reports the data your customer wants.

The best software doesn't get in the way. It has all the analysis required, and yet is flexible, because your customers have different specs and reporting needs. This is REVEAL

Moves into the future without losing the past

The clean Internet browser like user interface has no overlapping windows to get in the way. Add .dat format compatibility plus modern .h5 file formats, and REVEAL brings modern benefits, yet is compatible with your historic data.

A complete metrology package – selected parameter

APPLICATIONS

- ✓ BASIC
  - Form
  - Radius of Curvature
- ✓ Fourier[1]
  - MTF
  - PSF
  - PSD
- ✓ Optical Shop Testing[1]
  - Wedge
  - Polished Homogeneity
  - Prism
  - Corner Cube

FILTERS

- ✓ Masking
- ✓ Auto Aperture
- ✓ Reference Subtract
- ✓ Box
- ✓ Erosion (inside/out)
- ✓ Median
- ✓ Individual Zernike
- ✓ Spike
- ✓ Affine Transforms

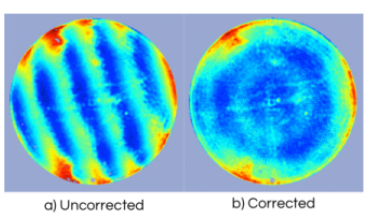
ANALYSIS

- ✓ Acquisition Modes
  - Vibration Tolerant PSI
  - Wavelength Shifting
  - Vibration Insensitive
- ✓ Zernike
- ✓ 3D View
- ✓ PVr
- ✓ Islands
- ✓ ISO10110-14
- ✓ Ogive

RESULTS

- ✓ ISO & Seidel
- ✓ PV, RMS
- ✓ PVr
- ✓ Tilt
- ✓ Power (Zernike/Deviation)
- ✓ Astigmatism
- ✓ Coma
- ✓ SA3
- ✓ 1D Profiles
- ✓ Lengths

[1] Optional Analysis Packages



Vibration Tolerant Phase Shifting - Standard

Specifications subject to change without notice

Measure...

Click...

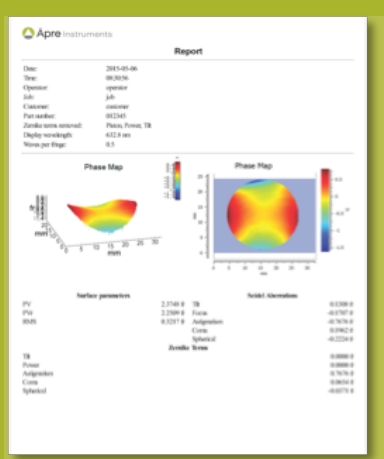
REPORT

Use built in standard reports, or create a library of customer specific reports with the simple HTML editor.

Consistency

Simplicity...and

Traceability



Contact us today

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